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Current IP Migration Efforts and The Future Network Vision

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Communications and Networking Session

Sponsored by SPAWAR
SPAWARSYSCOM
FORCEnet Chief Engineer

ADNS TODAY and TOMORROW

- **Today's NAVY WAN:**
  - **Single Path Access, No Restoral, Best Effort, Limited BW, No Guarantee's**
  - **No Network "Insight", Little Visibility, Limited Decision Making Tools**
- **The NAVY's Future WAN will be:**
  - **Bandwidth Efficient, Possess Multiple Survivable Paths, Contain Quality of Service Guarantee's and Provide Network Visibility to Remote/Local Users.**

ADNS is the NAVY's POR for WAN Networking and The Mechanism to Accomplish this Vision

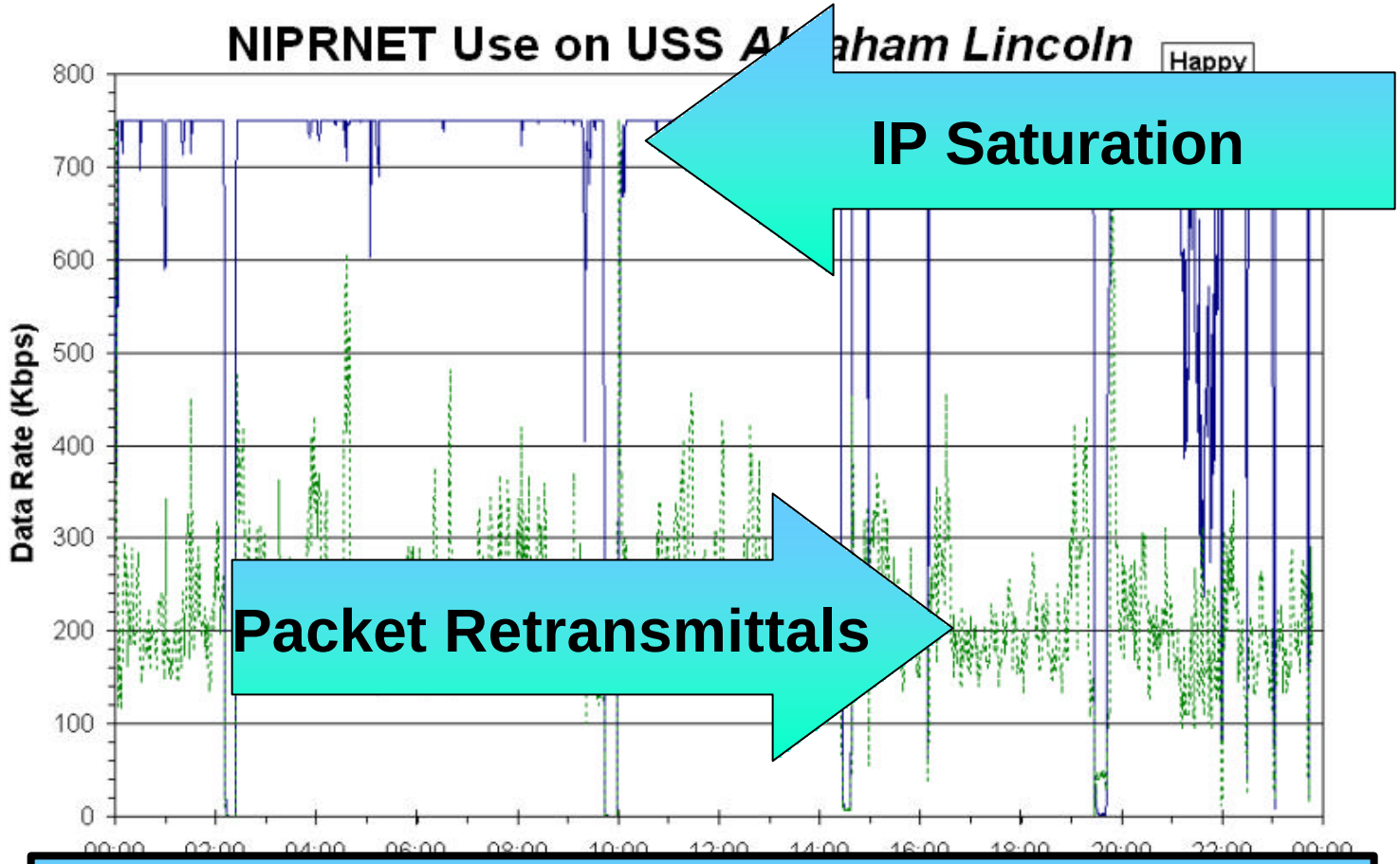
Increment I ADNS Provides:

- Limited Bandwidth
  - 512 or 768 IP Kbps to a US Nav[illegible] Carrier
  - 128 IP Kbps to a DDG/C[illegible]
  - 32 IP Kbps (Share[illegible]
- Afloat Units Maintain [illegible]timize IP Connectivity (Sin[illegible])
- Ships Limit Capabili[illegible]f to Maximize IP Capability – Legacy I[illegible]mplementation
- Network Performance Issues Isolated via Manual Voice Circuits Subject to Operator Intervention

Roadrunner Provides T1 to a Single Residence

INCREMENT I Solved 1998 Issues, Now Obsolete

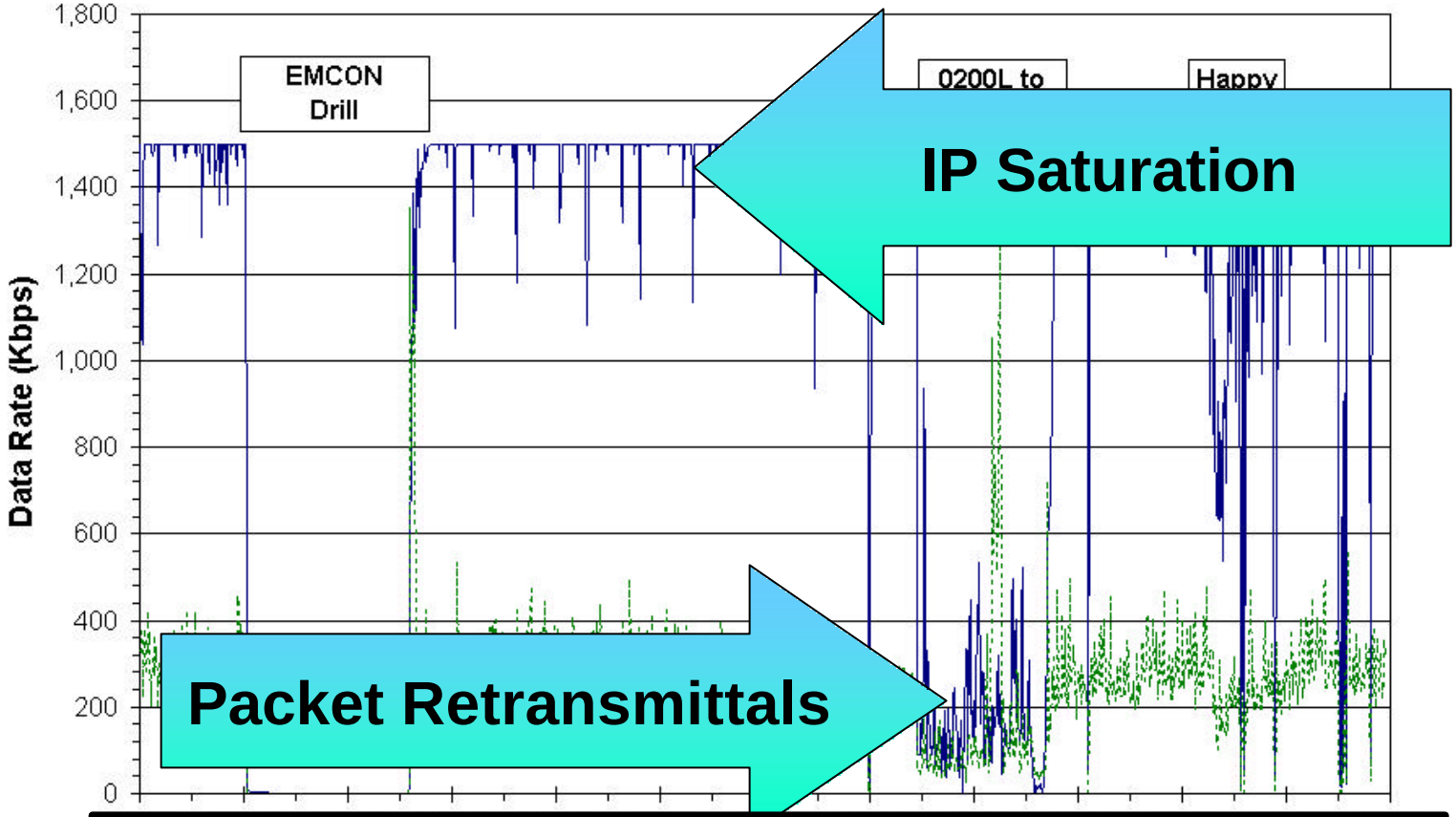
Incr I NIPRNET BW: 768 Kbps allocation



Increment I Does not Provide a BW Efficient Architecture

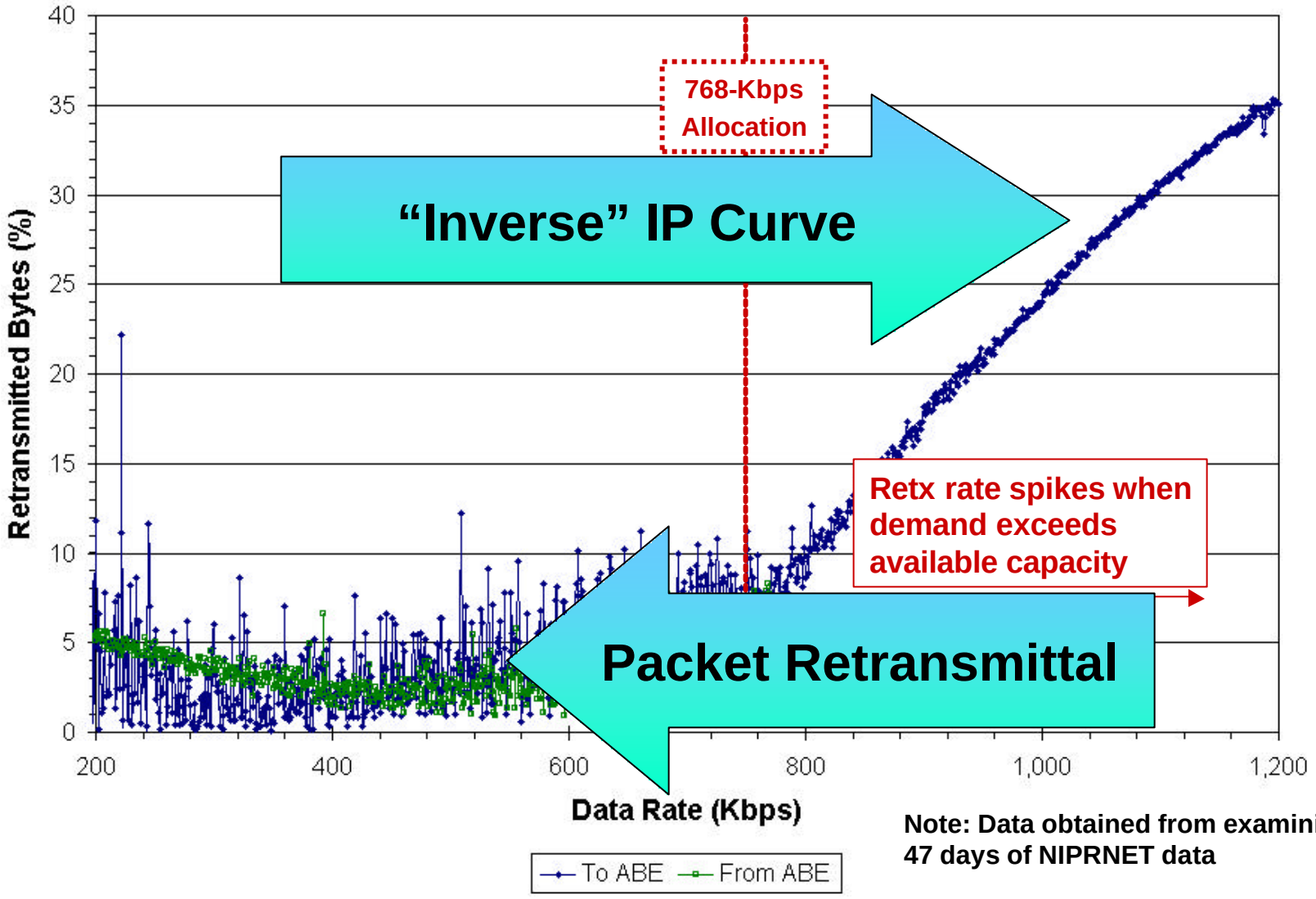
Incr I NIPRNET BW: 1,544 Kbps allocation

NIPRNET Use on USS *Abraham Lincoln*



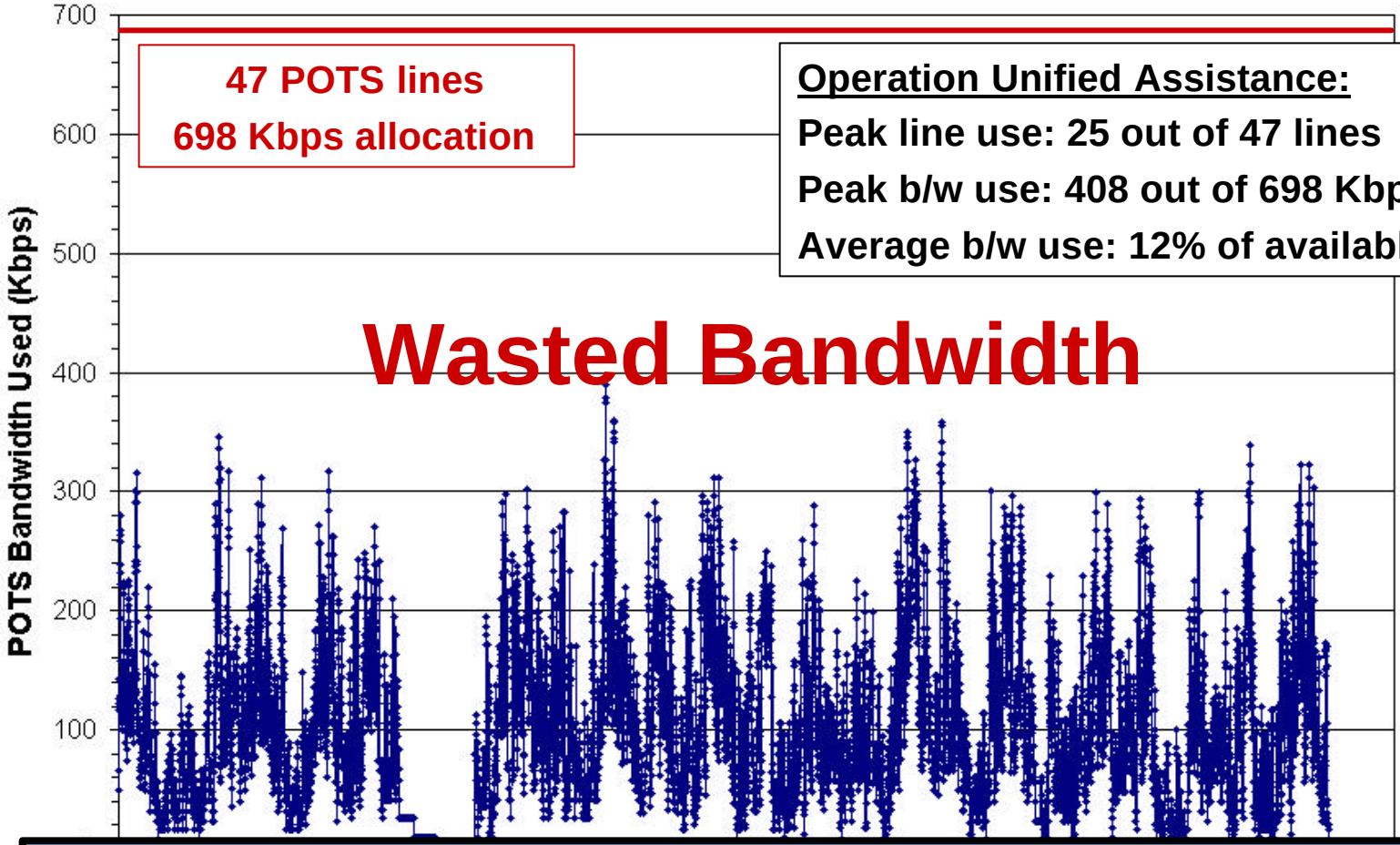
Increment I Does not Provide a BW Efficient Architecture

Incr I NIPRNET BW:
Typical Shipboard Environment



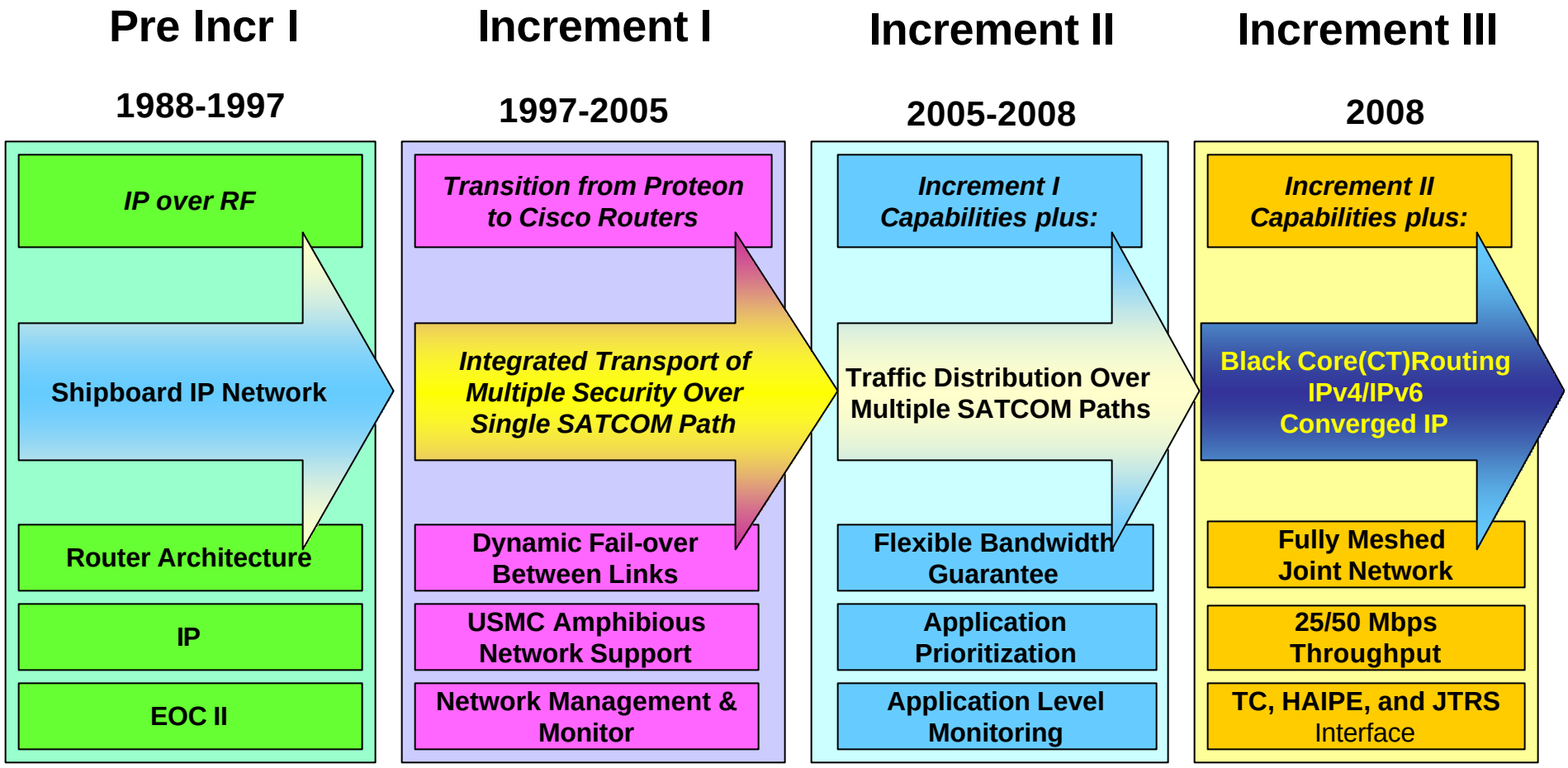
Note: Data obtained from examining 47 days of NIPRNET data

Incr I Typical POTS USE



Voice is not the Only Culprit – Serial Data and VTC Circuits Consume Major Portions of Static BW

ADNS Increments



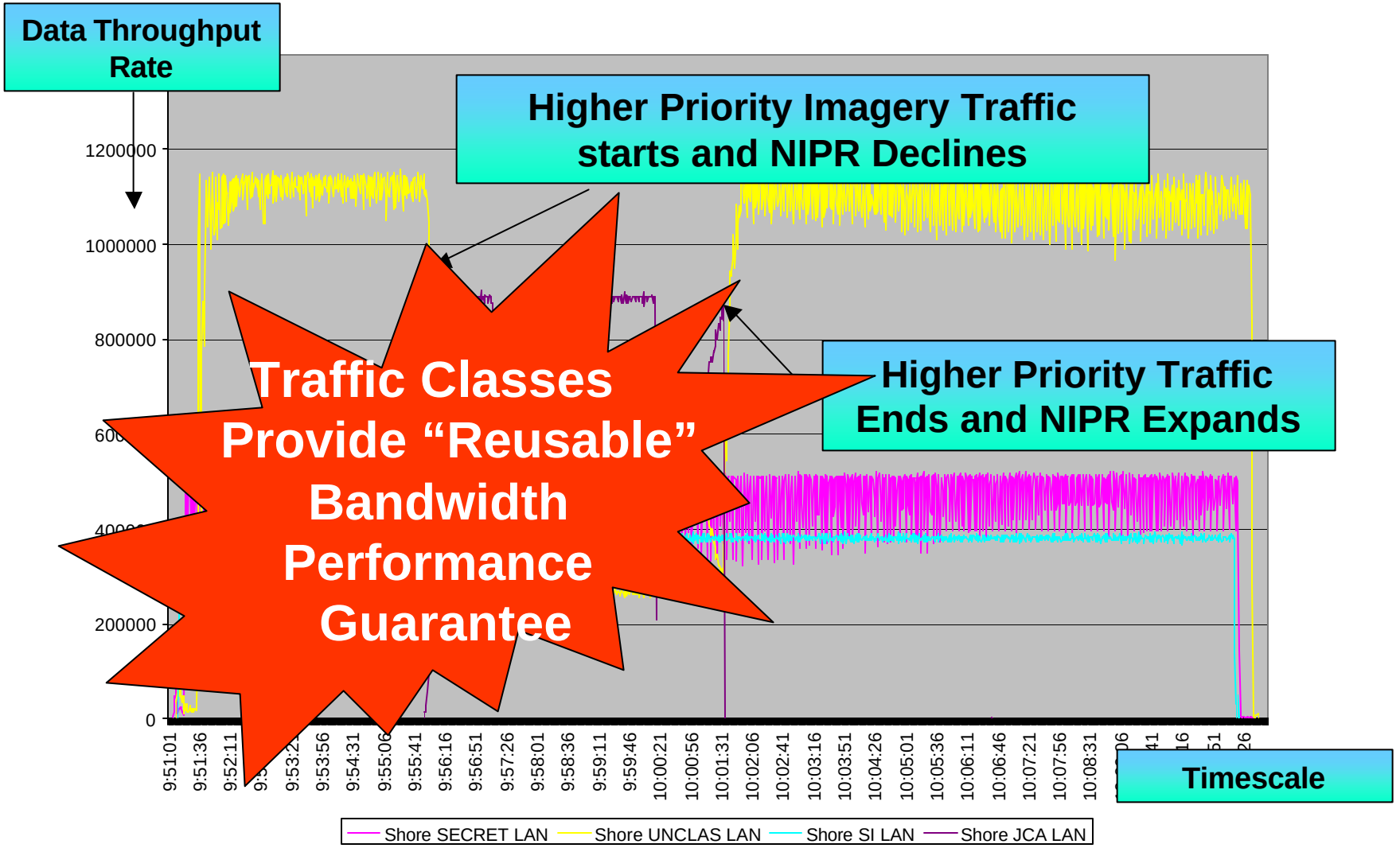
AN/USQ-144B(V)2/4
AN/USQ-144C(V)2/3/4
AN/USQ-144D(V)1/2/3/4
AN/USQ-144E(V)2/4
AN/USQ-144F(V)2
AN/USQ-144G(V)2/4
AN/USQ-144(V)5

AN/USQ-144D(V)1
AN/USQ-144H(V)2/4
AN/USQ-144J(V)2/4

TBD

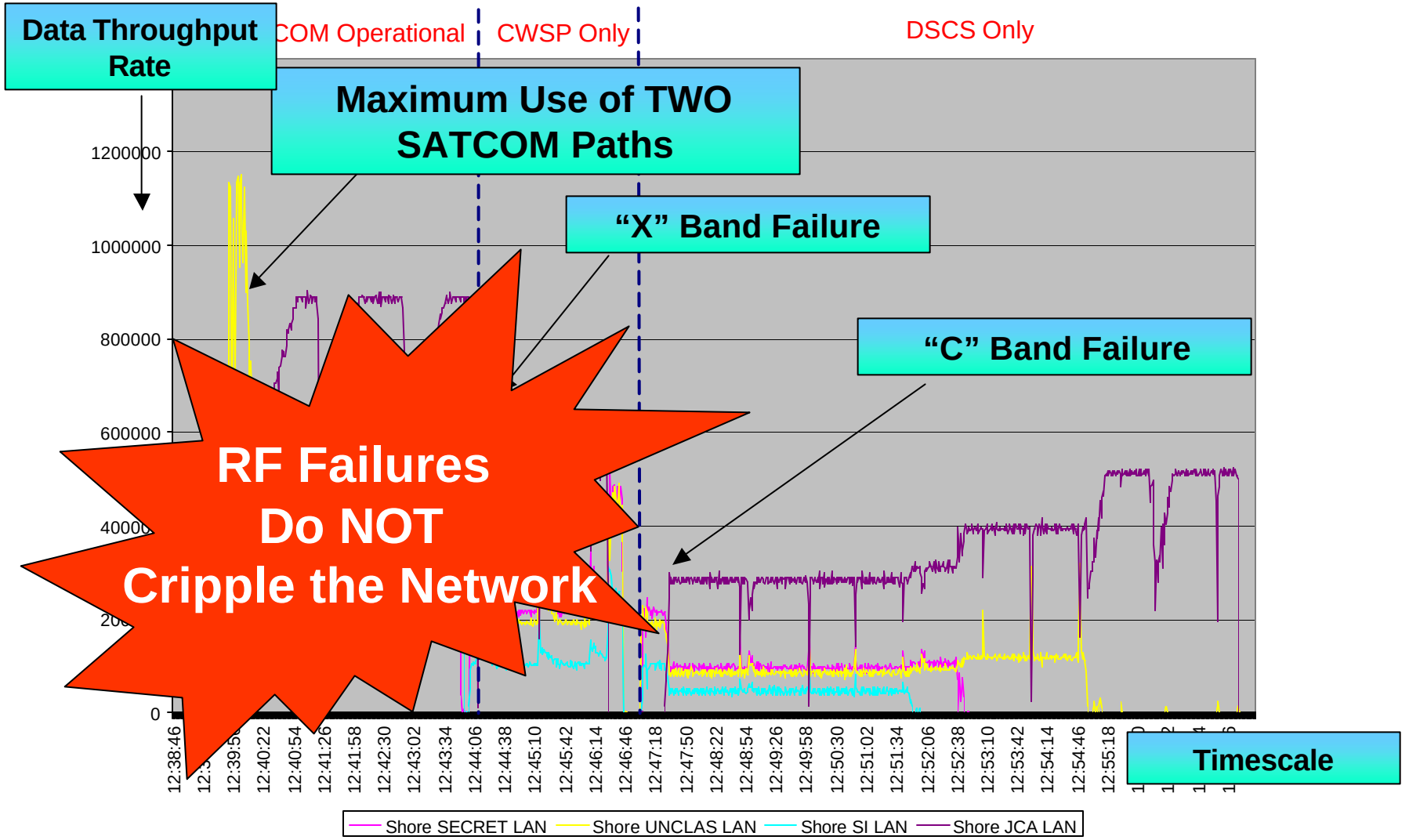
Incr II BW Guarantees

JCA & Unclass via CWSP (1024 kbps)
Secret via DSCS (512 kbps), SI via EHF (384 kbps)



Incr II Restoral

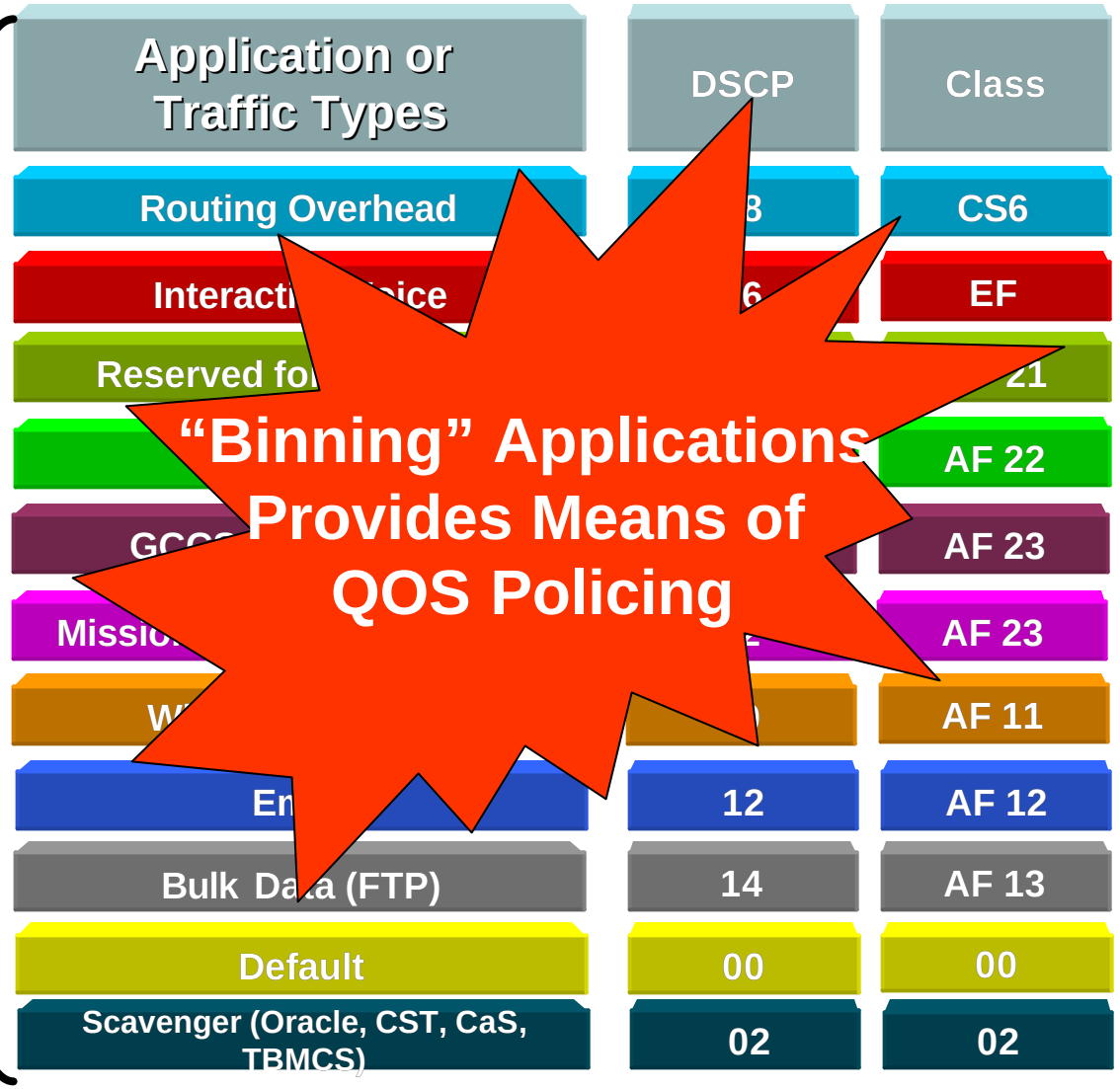
JCA & Unclass via CWSP (1024 kbps)
Secret (512 kbps) via DSCS, SI via EHF (384 kbps)



Incr II SIPR Application Prioritization

US NAVY Initial "True" QOS Implementation

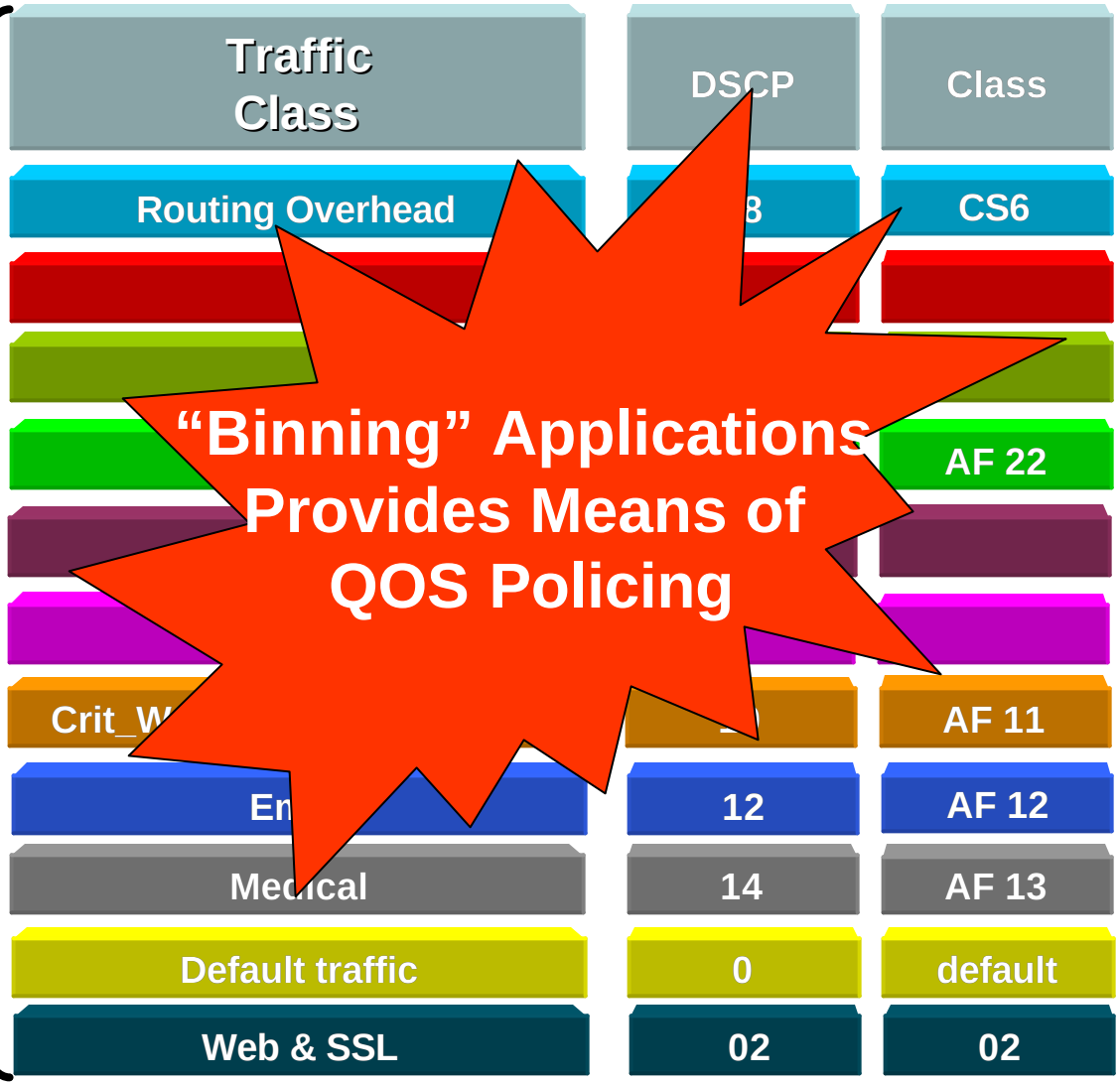
Determination of Priority is a "Warfighter" Input – CONOPS and DOCTRINE



Incr II NIPR Application Prioritization

QOS Must be ENFORCED at the POINT Of CONGESTION ADNS

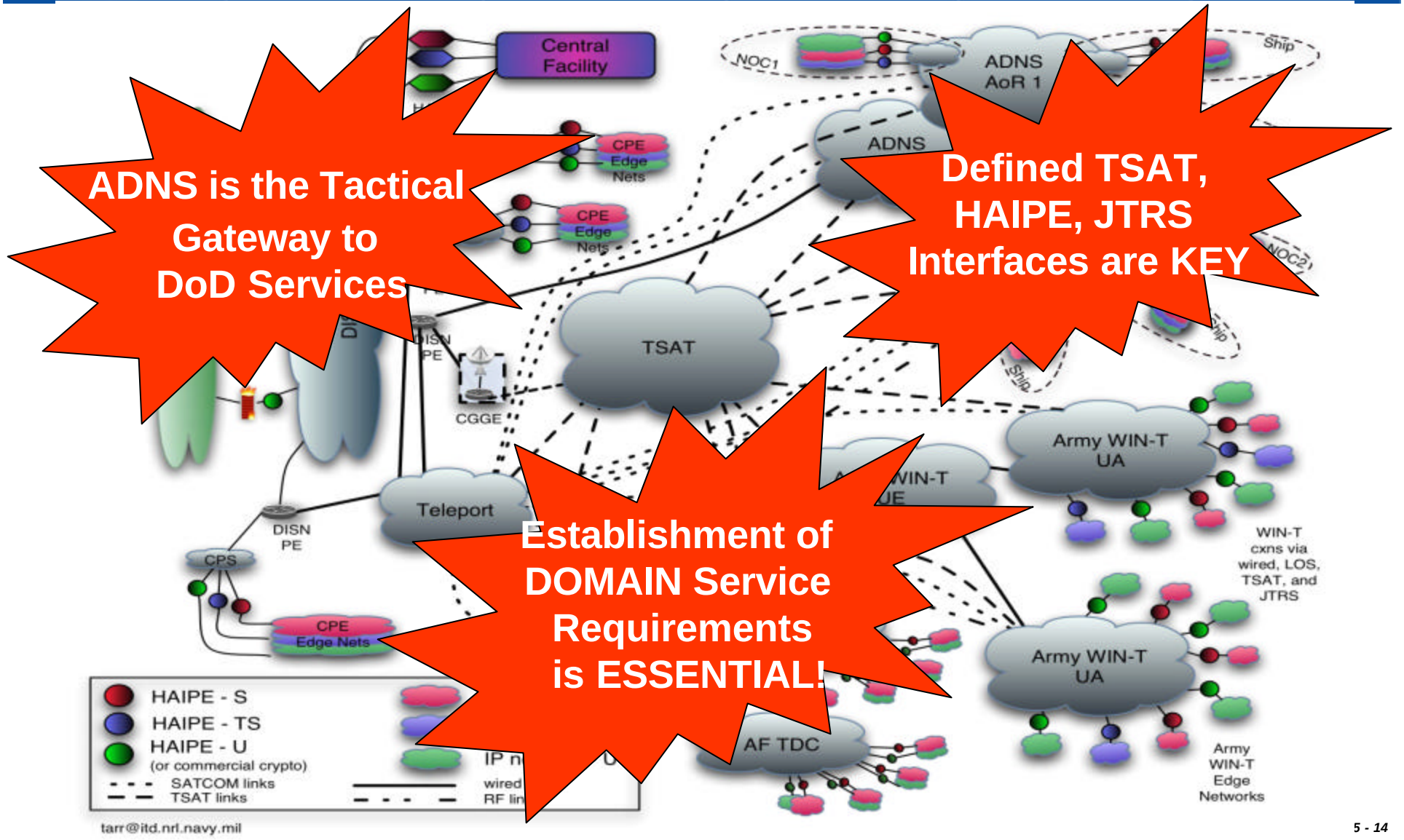
APPLICATION Characterization in terms of Duty Cycle, Surge Requirements, Jitter, Delay, Latency Requirements Must be Understood



ADNS Inc III Capabilities

- **Future Increment III Systems will support:**
  - 25/50 Mbps Tactical Throughput Capability
  - A Fully Meshed Network
  - Support for Real Time Mission Critical Applications requiring increased factors of Network Reliability and Availability
  - Network Capable of Supporting both IPv4 and IPv6 Applications
  - Support for Dynamic QOS and Dynamic Bandwidth Allocation
  - Support for Mobile Ad Hoc networking
  - Support for Multi-Cast Applications
  - Align with the Navy Tactical WAN with the DoD GIG across a Black Core Backbone

NOTIONAL VIEW OF Incr III GIG IP CONNECTIVITY



External Working Group Participation

- Support the various DoD/DISA/Joint Working Groups. To name a few:
  - DoD GIG QOS WG
  - DoD VoIP IA WG
  - DoD E2E Systems Engineering WG
  - JNIPT (JTRS Joint Networking IP WG)
  - WIN-T ICWG
  - GIG Network Mgmt and Control (NeMAC) WG
  - GIG IA Transition Strategy WG
  - GIG Routing Working Group (GRWG)
  - TELEPORT AofA IPT WG's
  - ICWG (US Army)
  - HAIPE

Summary

ADNS is the Tactical Navy "Gateway" to the GIG

The Interaction Between the ADNS "Domain" and Other Domain Users is Key to Architectural Development